

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Camil Thompson Examiner #: 79244 Date: 6/21/05  
 Art Unit: 1774 Phone Number: 571-272-150 Serial Number: 10/780,042  
 Mail Box and Bldg/Room Location: 10D28 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Light emitting fluorine-based copolymers, Elctrodes  
 Inventors (please provide full names): Nam Sung Cho; Do Hoon Huang;  
Hong-Ku Shm  
 Earliest Priority Filing Date: 8/10/01

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search on Claris 1-16.

Thanks.

SCIENTIFIC REFERENCE BR  
 Sci & Tech Inf. Cntr  
 JUN 23 2005  
 Pat. & T.M. Office

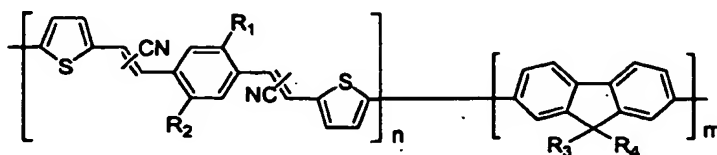
## STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>EA</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
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Date Completed: <u>7-8-05</u>	Litigation _____	Lexis/Nexis _____
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Online Time: _____	Other _____	Other (specify) _____

What is claimed is:

1. A light-emitting copolymer represented by the following formula 1:

Formula 1

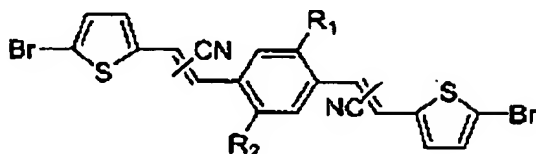


*m + n  
are not  
define in claim!*

wherein R<sub>1</sub> and R<sub>2</sub> represent silyl groups, alkyl groups or alkoxy groups; and R<sub>3</sub> and R<sub>4</sub> represent alkyl groups.

2. The copolymer as defined in claim 1, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> contain C<sub>1</sub> to C<sub>22</sub> linear or branched alkyl groups.
3. The copolymer as defined in claim 1, wherein a ratio of n/m ranges from 17.5/82.5 to 1.4/98.6.
4. A comonomer represented by the following formula 2

Formula 2

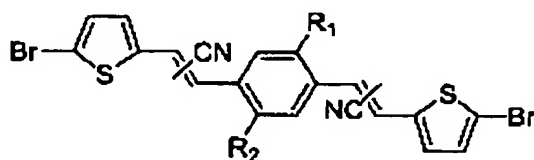


wherein R<sub>1</sub> and R<sub>2</sub> represent silyl groups, alkyl groups or alkoxy groups.

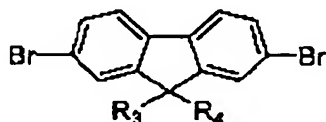
5. The comonomer as defined in claim 4, wherein R<sub>1</sub> and R<sub>2</sub> contain C<sub>1</sub> to C<sub>22</sub> linear or branched alkyl groups.

6. An electroluminescence device comprising a polymer light-emitting layer formed with the light-emitting copolymer of any one of claim 1.
7. The device as defined in claim 6, wherein the device is a multi-layer film structure comprising a semitransparent electrode, a hole transporting layer, the polymer light-emitting layer, an electron transporting layer and a metal electrode successively laminated on a substrate.
8. The device as defined in claim 6, wherein the polymer light-emitting layer is formed by blending the light-emitting copolymer with an electron or a hole transporting polymer.
9. A method of preparing the light-emitting copolymer of claim 1, comprising the step of copolymerizing a monomer represented by the following formula 2 and another monomer represented by the following formula 3 in the presence of nickel(0) catalyst:

Formula 2



Formula 3



wherein  $R_1$  and  $R_2$  represent silyl groups, alkyl groups or alkoxy groups; and  $R_3$  and  $R_4$  represent alkyl groups.

10. The method as defined in claim 9, wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  contain  $C_1$  to  $C_{22}$  linear or branched alkyl groups.
11. The light-emitting copolymer  $\text{poly}\{[9,9\text{-bis}(2'\text{-ethylhexyl})\text{fluorene}]_m\text{-}[2,7\text{-diyl-co-}2,5\text{-bis}(2\text{-thienyl-1-cyanovinyl})\text{-1-(2'-ethylhexyloxy)-4-methoxybenzene-5''},5''\text{-diyl}]_n\}$ .
12. The copolymer as defined in claim 11, wherein a ratio of  $n/m$  ranges from 17.5/82.5 to 1.4/98.6.
13. The comonomer 2,5-bis-{2-(4-bromothieryl)-1-cyanovinyl}-2-(2-ethylhexyloxy)-5-methoxybenzene.
14. An electroluminescence device comprising a polymer light-emitting layer formed with the light-emitting copolymer of claims 13.
15. The device as defined in claim 14, wherein the device is a multi-layer film structure comprising a semitransparent electrode, a hole transporting layer, the polymer light-emitting layer, an electron transporting layer and a metal electrode successively laminated on a substrate.
16. The device as defined in claim 15, wherein the polymer light-emitting layer is formed by blending the light-emitting copolymer with an electron or a hole transporting polymer.